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WHY GENETICALLY MODIFIED SALMON IS NOT A SUSTAINABLE SEAFOOD PRODUCT

There has been considerable debate about whether or not genetically modified (GM) Atlantic salmon should be allowed to enter the marketplace. While some advocates for the new technology suggest that GM salmon will take pressure off our wild fish stocks, conservation groups have serious concerns about the impacts on ecosystems and on wild Atlantic salmon in particular.

> "GM salmon is the first genetically modified meat in the world."

BACKGROUND:

In late 2013, Environment Canada approved the commercial production of GM Atlantic salmon. In 2015 the US government approved GM salmon for human consumption and in 2016 Canada did the same. It is the first genetically modified meat in the world.

The company, AquaBounty, already runs a facility in Prince Edward Island that produces GM salmon eggs. The company's current business plan involves the transport of these eggs to Panama for grow out.

Genetic modification is the transfer of genetic material directly from one or more organisms to another, across the species and kingdom barriers, and is dramatically different from traditional animal breeding. It can have unpredictable impacts on the organism and carries unknown risks for ecosystems.

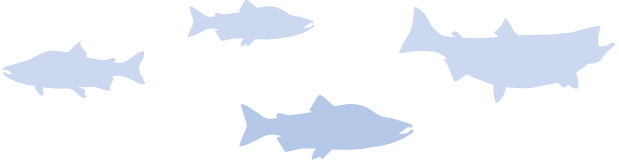
This Atlantic salmon is genetically modified by inserting a growth hormone gene from Chinook salmon and genetic material from ocean pout (an eel-like fish), to make it grow faster than other farmed salmon.

> "If even a few GM salmon were to escape, wild salmon populations could disappear or be altered forever."

ENVIRONMENTAL RISKS:

GM salmon production poses a grave threat to the future of wild Atlantic salmon. Many Atlantic salmon populations in Canada are endangered due to historic overfishing and ongoing habitat loss. The development of GM salmon poses additional risks: if escapes occur, GM salmon could outcompete wild salmon for food and if interbreeding were to also occur, it could fundamentally change our endangered wild Atlantic salmon.

AquaBounty is breeding only females; most are sterile but the company admits that up to 5% may be able to reproduce. Even if only 1% of the GM fish are fertile, escape from confinement would pose an unacceptable environmental threat.



THREATS TO WILD FISH

- The GM salmon are not all sterile. Up to 5% of GM salmon may be able to reproduce[1] and interbreeding with wild salmon and other fish is possible.[2]
- The GM salmon are modified to grow faster and research shows they can be more aggressive than wild salmon in times of food shortage, with the risk that they could out-compete them for food.[3]
- There is no guarantee that all future GM salmon operations will be in land-based containment facilities, especially if AquaBounty expands production into other countries as it says it wants to.[4]

The full environmental impacts of GM salmon will only be known when an escape happens. Any risk of GM Atlantic salmon escaping into the wild is unacceptable, especially when Atlantic salmon are already facing the risk of extinction in many regions. If even a few GM salmon were to escape, wild salmon populations could disappear or be altered forever.

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> “Because laws in Canada do not require GM foods to be labelled, when GM salmon is commercialized there will be confusion in the marketplace which could negatively impact all farmed salmon products.”

A CONTROVERSY IN THE MAKING

GM salmon has created considerable controversy in North America. Two Canadian conservation groups (Ecology Action Centre and Living Oceans Society - both members of SeaChoice, Canada's national sustainable seafood program) are so concerned about the ecological implications of GM salmon that they filed suit against the Canadian government for failing to adequately assess the risks. While the original case was unsuccessful an appeal is ongoing and may be heard before the end of 2016. The states of Washington and California have banned the production of GM salmon to protect their wild salmon and trout populations. In addition, the Aquaculture Stewardship Council prohibits the cultivation of transgenic (genes from other species) seafood in their standards, and Marine Harvest, one of the largest farmed salmon producers in the world, has stated that it does not support the introduction of GM salmon.[5]

The pending approval has already caused upheaval in the US market. Public interest groups have launched a campaign against GM salmon which has resulted in nearly **80 retail chains publicly committing to not sell GM salmon**. Large retailers with sustainable seafood commitments such as Kroger, Safeway, Target, Trader Joe's and Whole Foods have stated they will not sell GM salmon, and campaigns against other retailers continue. In Canada, 76 civil society groups have signed the statement "No GE Fish Research, Production, Consumption in, and Export from, Canada,"[6] and SeaChoice – Canada's leading sustainable seafood program - is asking its partners to make commitments not to sell GM salmon.

Consumers have made it clear that they have serious reservations about eating GM fish. Various US polling shows a majority of consumers are uncomfortable eating GM fish.[7] Public polling suggests a similar trend in Canada. A 2010 government-commissioned poll found that 58% of Canadians surveyed did not approve of the genetic modification of fish and 74% disagreed with the development of GM fish that grow faster and larger than non-GM fish.[8] 57% had little or no confidence in the safety and regulatory approval system for GM fish. Because laws in Canada do not require GM foods to be labelled, if GM salmon is commercialized there will be confusion in the marketplace which could negatively impact all farmed salmon products.

GM salmon is a controversial issue that will likely continue to impact discussions about sustainable seafood procurement into the future. Our recommendation to retailers is to get ahead of the curve and make a pledge to protect wild salmon from the threat of GM technology before controversy lands on store shelves. We look forward to working with businesses to integrate a commitment on GM salmon into their larger sustainable seafood procurement policies.

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FOR MORE INFORMATION PLEASE CONTACT:

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LIVING OCEANS

[1] Fisheries and Oceans Canada. (2013) Summary of the Environmental and Indirect Human Health Risk Assessment of AquAdvantage Salmon. Canadian Science Advisory Secretariat, Science Response 2013/023

[2] Oke KB, Westley PAH, Moreau DTR, Fleming IA. (2013) Hybridization between genetically modified Atlantic salmon and wild brown trout reveals novel ecological interactions. Proc R Soc B 280: 20131047. http://dx.doi.org/10.1098/rspb.2013.1047

[3] Robert H. Devlin, L. Fredrik Sundström, and Rosalind A. Leggatt (2015) Assessing Ecological and Evolutionary Consequences of Growth-Accelerated Genetically Engineered Fishes. BioScience 2015 : biv068v1-biv068.

[4] AquaBounty's Panama facility has already been fined by the Panamanian government for failing to adhere to environmental regulations. One of the violations was that the company failed to adequately treat its waste-water, which is directly related to contamination threats. See: www.theguardian.com/lifeandstyle/2014/oct/29/panama-regulators-could-slow-us-approval-of-gm-salmon

[5] Undercurrent News. (2013) "Marine Harvest, WWF demand GM salmon is labeled, if approved". Undercurrent news. December 4.

[6] www.cban.ca/Resources/Topics/GE-Fish/Statement-Opposing-GE-Fish

[7] Allison Kopicki. (2013) Strong Support for Labeling Modified Foods. The New York Times. July 27

[8] Harris Decima. (2010) Innovative Agricultural Technologies, Public Opinion Research Commissioned by Agriculture and Agri-Food Canada